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He Pops 18 Grams a Day

The Pauling Factor: Vitamin C Gets a Hearing at NIH

With double Nobelist Linus C. Pauling, the Don Quixote of vitamin C, hovering over the proceedings, vitamin C came in from the scientific wilderness last month at a conference quietly held at the National Institutes of Health.

Part preemptive response to Pauling's fantastic, unconfirmed claims for the therapeutic powers of vitamin C, part acknowledgement that the nutrient is biologically important and under-investigated, the meeting was an extraordinary event for the Bethesda, Md., bastion of scientific orthodoxy. Held September 10-12, it's agreed that it took place only because of the persistent advocacy of Pauling, 89 years old, a bit frail, but alert and mobile, and self-described as ingesting 18 grams of vitamin C (ascorbic acid) daily. The US Recommended Daily Allowance for normal adults is 60 milligrams. Pauling says the dosage was chosen because it is the point at which vitamin C causes him to experience diarrhea.

with vitamin C and asked Pauling to furnish clinical data.

Klein, corroborated by Pauling, quotes NCI Director Broder as responding to the vitamin C reports by saying, "We have nothing on the immediate horizon to offer of any significance for treatment of cancer patients." The alleged statement is contradicted by Broder's public utterances on the state of cancer treatment, though Broder has publicly said that there's good and bad news about treatment. Asked

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A common view in scientific ranks interested in vitamin C is that Pauling has brought disrepute to the field with wild claims of cures, but that, ironically, his immense scientific stature has brought needed attention to a neglected field of research. Referring to Pauling, Donald Henson, a National Cancer Institute physician and senior administrator who organized the meeting, told SGR, "You can't ignore someone with two Nobel prizes," which Pauling received for chemistry, in 1954, and peace, in 1962. Assigned to conceptualize and organize the conference, Henson said, "I could see nothing but continuous controversy over vitamin C and felt it was best for NCI to confront the issue by addressing it from a scientific point of view."

According to the Pauling camp, as confirmed in large part by NCI officials, the conference arose from a meeting in April 1989 at which Pauling made a pitch to NCI Director Samuel Broder. In a version offered by Pauling's tireless associate and advocate, Morton Klein, a Philadelphia investment specialist and former federal health statistician, Broder was at first skeptical. But, says Klein, who was present at the Broder-Pauling session, the meeting, originally scheduled for one hour, stretched to three as Broder displayed increasing interest in Pauling's claims for vitamin C. Klein says Broder showed particular interest in Pauling's reports of extended survivals for pancreatic cancer patients treated

In Brief

Research agencies, along with others in the federal establishment, were in a budget fog last week as the October 1 fiscal new year approached, the budget summit remained stalled, and not one appropriations bill had yet emerged from Congress. Bracing for fiscal uncertainty, NSF has announced that continuing payments due this fall will be at a "provisional level of only 50 percent," with the balance "subject to the final resolution of the budget situation."

The White House has chosen heads for three research and health agencies long led by acting chiefs, but none is likely to be on the job until next year. The pick for NSF is Walter Massey, Vice President for Research at the University of Chicago; for NIH, Bernadine Healy, Director of Research at the Cleveland Clinic Foundation, and for the Food and Drug Administration, David Kessler, Director of Medicine at the Albert Einstein College of Medicine. But as of late September, their nominations hadn't been forwarded to the Senate, due to recess next week until January 3. Recess appointments are possible, but rarely used. Why the delays upon delays? Other matters preoccupy the White House.

The Department of Energy has again postponed delivery of the "final estimate" on the ever-rising cost of the Superconducting Super Collider—originally scheduled for August 17 and then advanced to September 7. The latest word is that the estimate is now making the inter-agency rounds. A release date was not stated. Various reports indicate the estimate was so horrendously high that DOE sent it back for shaving.

Meanwhile, the space station has taken another budget beating on Capitol Hill, which, in customary Congressional treatment of misbegotten big projects, will neither kill it nor let it thrive. The Senate Appropriations Subcommittee cut \$800 million from the requested \$2.4 billion; earlier, the House cut \$200 million.

... NIH to Consider More Research on Vitamin C

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by SGR to check Klein's version with Broder, an NCI spokesman quoted Broder as saying, "No, that's not right." The spokesman said Broder recalled having "a good meeting" with Pauling, but didn't recall how long it ran.

In any case, the meeting between Broder and Pauling spawned a receptiveness by NCI to hold a conference on vitamin C, which is barely on the charts as a research topic within the NIH complex. There are no clinical studies in progress involving vitamin C.

But, according to data requested by SGR, support in fiscal 1989 consisted of 46 basic research grants, for a total of \$1.9 million, and six contracts, totaling \$367,000. With the completion of some of these projects, the grants this year are down to 26, totaling \$1.6 million. Contracts have declined to two, but the support is up, to \$1.7 million. It's chickenfeed in NIH standings, even assuming that all the items answering the retrieval system's inquiry for "ascorbic acid" can reasonably be considered research on the biologic effects of ascorbic acid.

NIH, a paragon of scientific *glasnost*, didn't attempt to curtain off the September 10-12 conference, which was attended by 130 researchers on an invitational basis and open to reporters, though SGR encountered only one other there. But, given public excitability about the therapeutic cancer claims that Pauling and associates have made for vitamin C, NIH didn't publicize the program or Pauling's involvement, for fear that masses of vitamin C enthusiasts would swamp the auditorium. And the program was carefully organized to maximize basic scientific content and exclude reports of astonishing cures.

Pauling's claims for vitamin C as a human cancer preventive and treatment were thus absent from the agenda of the conference, which was titled "Ascorbic Acid: Biological Functions and Relations to Cancer." Presentations were confined to basic research reports, mostly from investigators at mainstream institutions. In all 33 papers and eight posters were presented at the meeting, which was jointly sponsored by the National Cancer Institute and the National Institute of Diabetes and Digestive and Kidney Diseases. NCI provided \$55,000 and NIDDKD \$20,000 for the speakers' expenses and \$100 a head for honoraria.

Pauling, who heads his own research institute in Palo Alto, California, delivered a non-inflammatory paper titled "Reduced Incidence and Tumor Burden in Spontaneous Mouse Mammary Tumors and UV-Induced Tumors with Increasing Ascorbic Acid." His delivery was clear and confident. Participating later in a panel discussion, Pauling, who will be 90 in February, elicited whispers of admiration when he responded to a question by calculating aloud the vitamin C dosages administered to a batch of experimental animals.

The scientific quality of the meeting was praised by one of the few NIH staff researchers working on ascorbic acid,

Mark Levine, a physician who is Director of the Intramural Nutrition Program at the National Institute of Diabetes and Digestive and Kidney Diseases. Levine, a senior investigator in the Institute's Laboratory of Cell Biology and Genetics, says the paucity of ascorbic acid research is inexplicable, given the many vital biologic functions for which it is essential. Many excellent papers were presented, he said, but more important, in his view, the meeting brought together researchers who had previously been working in isolation. It was because of Levine's work on ascorbic acid that the NIDDKD was invited to join the NCI in sponsoring the conference. That was the first time that two NIH institutes have jointly sponsored a scientific conference, according to Donald Henson, Program Director in NCI's Early Detection Branch, Division of Cancer Prevention and Control. Henson said that still to come is an analysis of documents provided by Pauling on 25 cancer patients treated with vitamin C. To carry out that study, he said, a panel of 12 specialists is being assembled for a meeting tentatively planned for December.

In addition, Henson said, various speakers at the September 10-12 conference will be invited to NCI to provide suggestions for additional basic research. The aim, he said, is to present a program to NCI's Board of Scientific Counselors "to see if we can get funds for further research."

Henson, like virtually all others at NCI, regards Pauling's medical claims with scornful skepticism, citing the lack of double-blind studies and reliable records. But he says that "Pauling should get the credit for stimulating interest in vitamin C." Henson's draft report on the meeting concludes as follows:

"The take-home message was that vitamin C has multiple complex effects on a variety of biologic activities, perhaps wider than any other nutrient. Many of these effects seem related to its chemical properties and not to its role as a vitamin. What seems needed is a unifying principle that can provide a common explanation for the diverse observations. Any role for ascorbate in the prevention and treatment of cancer will only come through scientific studies on its biologic actions."—DSG

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Misconduct Update: Slow Progress on Big Cases

Several highly publicized cases involving allegations of scientific delinquency have been moving, though glacially, toward resolution, while a number of new episodes of more than routine interest have been added to the list in recent months. The leaders of science complacently insist that all is under control, which it isn't. Following is an update on a subject that is polluting relations between science and politics.

The "Baltimore Case." So called because of Nobelist David Baltimore's co-authorship and strident defense of a 1986 paper in *Cell* whose validity was challenged by a postdoctoral fellow, this is the longest running case on the federal docket and likely to be the most embarrassing for science when the verdict is in (SGR July 1).

The focus of the investigation, now in its third year at NIH, is the work of Baltimore's collaborator on the paper, Thereza Imanishi-Kari, now at Tufts, formerly of MIT. The case drew the scornful attention of Rep. John Dingell (D-Mich.) for what he termed "whitewashes" by MIT and Tufts and for the shabby treatment of the "whistle-blowing" post-doc, Margot O'Toole.

SGR hears that the NIH investigating panel, due to report soon, will confirm O'Toole's allegations of data fabrication and misrepresentation. Imanishi-Kari has refused to cooperate with the NIH investigation. Referring to "evidence that was developing in the investigation," NIH early this year canceled one of Imanishi-Kari's grants "on grounds of significant questions about her fitness" to receive government funds.

The Baltimore case will not end with NIH's findings against Imanishi-Kari. SGR is advised that the NIH Office of Scientific Integrity next plans to review the handling of the case by officials at MIT and Tufts, both of which dismissed O'Toole's allegations. The possibility of criminal violations by Imanishi-Kari—including fraud and false statements—was raised during a hearing last May by Dingell's Oversight and Investigations Subcommittee. Throughout the proceedings, the evasive and misleading performance of prominent members of the scientific establishment has given science its own mini-Watergate. Awaited with wide interest is the response of David Baltimore, now President of Rockefeller University, who orchestrated and led a national campaign to depict Dingell as an anti-science McCarthyite.

The Gallo Case. For years, reports circulated that Robert C. Gallo, America's most celebrated AIDS researcher, had fished the identification of HIV from a French collaborator and competitor, Luc Montagnier, of the Pasteur Institute. The allegations, no source of unhappiness to Gallo's many detractors, were dismissed several years ago in a once-overlightly review at the National Cancer Institute, where Gallo heads a major lab. Last November, however, doubts about

Gallo were re-energized when the *Chicago Tribune* published a 50,000-word investigative report on the HIV identification. Written by John Crewdson, a Pulitzer Prize winner, the report concluded that Gallo's achievement was due either to a theft or an accident. Whereupon Rep. Dingell asked NIH to get on the case (SGR January 15).

The response, under way since late last year, is a cumbersome and unusual process akin to a grand jury proceeding under review by an outside committee of specialists. Handled by NIH's Office of Scientific Integrity (OSI), the Gallo case is officially at the "inquiry" stage, which, depending on the findings, may or may not lead to an "investigation." To assure purity in an unpleasant matter concerning one of its own stars, NIH took the unusual step of asking the Institute of Medicine to suggest names for a special committee to keep a watch on the proceedings of the OSI "Inquiry Team." Thus came into being the Panel of Consultants Concerning Research Conducted in the Laboratory of Tumor Cell Biology, National Cancer Institute, by Dr. Robert Gallo et al. Initially 11 members but now at nine, the Panel is Chaired by Frederic M. Richards, Professor of Molecular Biophysics and Biochemistry, at Yale.

Passive onlooking might be anticipated from a panel of busy professionals with no direct operational responsibility in a matter as complex as the Gallo affair. But not this one. In June, following a meeting at which it reviewed the inquiry and various documents, the Panel unanimously voted to recommend "termination of the inquiry phase of proceedings and institution of the formal investigation."

Presenting its recommendation in a letter to William F. Raub, Acting Director of NIH, the Panel explained: "This decision was based on the review of material at the meeting. Some data appeared to be missing from the data books. There is a possibility of selection and/or misrepresentation of data. There is a need for the Panel to plan experiments on the viral samples that have been sequestered or that can be located." The Panel added that "this situation fits the stated requirements to proceed from the Inquiry Phase to a Formal Investigation."

Responding by letter late in July, Raub rejected the recommendation for an upgrade to investigation. Under the charge to the Panel, Raub stated, the "threshold" for moving from inquiry to investigation is "substantial reason to believe scientific misconduct may have occurred." He added, "I am concerned that none of us could explain adequately why we should ignore the charge at this stage."

The Gallo case thus remains an inquiry. At this point, the outcome is uncertain.

The Weissmann Case. Heidi Weissmann, MD, has a decision from the United States Court of Appeals, Second Circuit, upholding her contention that her former boss and mentor infringed her copyright when he removed her name

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Reforms Lag on Misconduct, House Report Charges

A documented collection of recent cases of scientific sleaze has been issued by Rep. Ted Weiss (D-NY), whose inquiries into misconduct in research have tended to be obscured by the flashier performance on that beat by Rep. John Dingell (D-Mich.). Weiss chairs the Government Operations Subcommittee on Human Resources and Intergovernmental Relations, which has held three hearings and conducted various studies of misconduct since early 1988.

With many examples cited to make its points, the Weiss report concludes that financial conflicts of interest are no rarity in academe, particularly in relations between clinical researchers and pharmaceutical firms; that universities are reluctant to investigate allegations of wrongdoing by senior professors, and are more inclined to doubt and punish "whistle-blowers," and "it is not possible to rely on institutional or PHS [Public Health Service] oversight for the handling of misconduct allegations or the prevention of misconduct."

The Weiss report, *Are Scientific Misconduct and Conflicts of Interest Hazardous to Our Health?* (House Report 101-688, 65 pp.), is available without charge from: House Documents Room, Annex No. II, Room B-18, 2d and D Sts. SW, Washington, DC 20515; tel. 202/225-3456.

Among the cases cited is the clinical testing of the clot-dissolving drug tissue plasminogen activator (TPA). "Although it was not publicly reported at the time," the report states, "at least 13 of the researchers involved in the NIH-funded research owned stock in Genentech [producer of the drug] or held options to buy the stock at a discount." Noting disputes over the relative efficacy of TPA, the report states that the research literature on the drug "has repeated examples of more positive evaluations of TPA by scientists with relationships with Genentech, compared to scientists without such relationships."

Following a hearing on the TPA case by the Weiss subcommittee in 1988, the report notes, a group of researchers, led by Bernadine Healy of the Cleveland Clinic, adopted guidelines prohibiting financial conflicts of interest in drug testing. (Healy was reported last month as the White House choice to head NIH).

The Weiss report goes into several other episodes of recent notoriety, including the case of Charles Bluestone at the University of Pittsburgh, accused by a colleague, Erdem Cantekin, of misrepresenting the results of clinical trials involving drugs produced by companies from which Bluestone had received generous grants and honoraria. The University found Cantekin guilty of misconduct when he tried to publish contrary data.

The Weiss report makes disturbing reading. The response from the establishment is that the problem is under control. The previous response was that there is no problem.

... More on the Cases

(Continued from Page 3)

from a nuclear-medicine syllabus she had written, substituted his own, and "actually attempted to pass the work off as his own" (SGR May 1).

In October 1989, the US Supreme Court declined to review the decision, and thus left it standing. But the court ruling doesn't count at Weissmann's former place of employment, the Montefiore Medical Center, a teaching hospital of Yeshiva University's Albert Einstein College of Medicine, in New York City. Weissmann says she was fired in September 1987 from her decade-long position there in the Department of Nuclear Medicine, while the colleague who took her work, Leonard Freeman, MD, was promoted to Vice Chairman of the Department.

Not inclined to haste, in March 1990, Montefiore convened an Inquiry Panel on Scientific Misconduct of Montefiore Medical Center, Re Dr. Leonard Freeman and Dr. Heidi Weissmann. Concluding its work in June, the Panel reported that it "did not feel bound" by the court decisions "and we do not believe that copyright infringement is equivalent to plagiarism or scientific misconduct." Noting that Freeman and Weissmann had jointly published many articles and had engaged in "joint and interchangeable authorship," the Montefiore panel concluded that "the pattern of rotating authorship . . . may constitute scientific misconduct. Therefore it is the unanimous recommendation of the Inquiry Panel that Dr. Freeman and Dr. Weissmann jointly be the subject of an investigation.

"We recognize the seriousness of the consequences of our recommendations," the Panel stated, adding, "We found this inquiry a painful experience, and we agonized over the decisions we reached."

Meanwhile, Weissmann is proceeding with a civil suit against Montefiore, Einstein, and Yeshiva, and several of her former colleagues, charging sex discrimination, mail fraud and several offenses under the Racketeer Influenced Corrupt Organizations Act. In preparation for the suit, she has collected searing statements from several other physicians who conducted research in or around Freeman and the Montefiore Department of Nuclear Medicine. Weissmann's decision to proceed with the suit followed an offer from Montefiore to pay her \$150,000 if she would drop the legal action and advise "the Congressional Committee investigating academic misconduct" that Freeman "did not engage in any scientific misconduct or breach of professional ethics." The Congressional reference is to the House Government Operations Subcommittee on Human Resources and Intergovernmental Operations, chaired by Rep. Ted Weiss (D-NY), which produced the report described in the adjacent column.

Grant-Seeking Arts Could Learn from the Sciences

If only the artsy-museum crowd would shed its naive illusions about federal money, it might share the fruitful experience that its scientific cousins have long enjoyed at the public trough.

All that's required, as the scientists have found, is the realistic acceptance that federal money comes with strings and the paymaster holds the right to set the rules. But no, esthetic sensibilities gag on such political acquiescence. And that has led to a nasty though needless squall on the issue of whether the National Endowment for the Arts may finance "obscene" works.

The political right has responded with predictable tirades against subsidized filth. Many moderates have prudently ducked, figuring this is one they can sit out. Meanwhile, leading figures in the art world have indignantly challenged the obscenity restrictions as intrusions on artistic integrity. And some artists and institutions have declared that the rules taint the money and they won't take any more of it.

How principled, but foolish, as can be seen from an examination of the sciences, which are senior to the arts in beneficial dealings with Washington, as well as wiser and far, far richer. For all the turmoil about the Endowment for the Arts, it runs on an annual budget of merely \$170 million, whereas the sciences receive over \$10 billion from a flock of supportive government agencies.

Science, too, encounters disagreeable political dictates about the use of government money, but it doesn't go kamikaze in response. For example, one of the most promising lines of research for treating Parkinson's disease and other neurological disorders involves the transplantation of fetal tissue into the brains of patients. The outgoing Reagan administration banned federal funds for the procedure on the implausible grounds that the prospect of beneficial use of the tissue might tilt a wavering woman to undergo an abortion. The Bush administration has affirmed the ban, thus impeding progress toward the development of treatments. Research on birth control has nearly dropped off the federal agenda, for purely ideological reasons.

Some researchers have publicly expressed dismay at these political intrusions into their professional jurisdiction. But there's been no storm of protest or repudiation of federal support. Long pragmatic in its dealings with Washington, the science establishment devotes its skills to getting on with its federal patrons, not fighting them. The medical research community is currently directing a great protest at the federal government, but it concerns one subject: more money for medical research.

During the cold war, the Pentagon's desire for close research ties with universities collided with academe's self-righteous insistence on the tradition of openness in research. No problem, however. Desiring both the money and the appearance of rectitude, universities simply adopted the fiction of off-campus laboratories working on classified

projects for the Defense Department. The charade dismayed many academics, but it endures as a feature of academic science—alongside the proud tradition of openness.

Where the artists might also emulate the scientists is in the tactic of depicting the federal government as destructively neglectful, no matter how bountiful the support may be. For example, in a *New York Times* opinion piece headlined "Medical Research in Ruins," Leon E. Rosenberg, Dean of the Yale University School of Medicine recently wrote, "Today our nation's health research program is burning, and the conflagration is spreading." He did not mention that the budget of the National Institutes of Health nearly doubled during the past decade and that the number of NIH grants is at an all-time high.

If the artists are going to make the big time in Washington, they'll have to jettison some pride and those obstreperous colleagues who persist in offending the patrons. There's gold in the capital for those who bend with the rules. For particulars, artists should check with the scientists.—DSG

Stanford on the Griddle

The murky subject of overhead rates for federally supported research at universities is coming under Congressional scrutiny following charges by a government auditor of hanky-panky by Stanford University, which draws some \$400 million a year in R&D from Washington. The Stanford indirect cost rate, 74 percent, is not stratospheric as such things go, but Stanford has been pushing for a much higher figure.

The auditor, Paul Biddle, works for the Office of Naval Research (ONR), which checks the books and sets the overhead rates for many non-profits receiving federal funds. In a memo to his boss in March, Biddle accused Stanford of deliberately withholding information sought by ONR and, referring to the Air Force Office of Scientific Research, which is also in the audit business, said that AFOSR "believes that Stanford engaged in fraudulent acts, and at a minimum, false statements and false claims."

Such allegations are red meat for Chairman John Dingell (D-Mich.), whose House Oversight and Investigations Subcommittee holds jurisdiction over NIH, the Department of Energy, and other major sources of research funds. Dingell has asked the General Accounting Office to survey the overhead scene, and, in a letter in August to Stanford President Donald Kennedy, Dingell requested access to Stanford's financial data relevant to overhead calculations dating back to 1983-84.

Kennedy, in a statement issued September 12, said that "We intend to cooperate fully with these inquiries." The word around Washington is that the Stanford President was recently in town looking for a politically well-connected law firm to represent the University in this matter.

Social, Behavioral Sciences Seek Upgrade at NSF

A push is under way to upgrade the social and behavioral sciences at the National Science Foundation to Directorate status, the highest disciplinary rank in the NSF organizational structure.

This is a long-cherished, and frustrated, goal of these fields, but this time, more power has been mustered than ever before, including legislation to mandate the change. A key factor will be the next NSF Director, a post for which Walter Massey, a physicist and head of research at the University of Chicago, is the White House choice. His predecessor, Erich Bloch, did not look fondly on the creation of new entities within NSF, nor did he accept as accurate the claims of fiscal neglect in the social and behavioral sciences.

At present, they are clustered within the NSF Directorate for Biological, Behavioral, and Social Sciences, which this year has a budget of \$293 million within a total NSF budget of \$2.1 billion. From the Directorate's funds, \$48 million is budgeted for "behavioral and neural sciences," and \$33 million for "social and economic sciences."

How they have been treated financially is a subject of contention, with Bloch insisting that they have made a good comeback from the Reagan-era cuts. But the bill to set them loose (HR 5543), introduced by Reps. George Brown (D-Calif.) and Doug Walgren (D-Pa.), reflects the contention that they have fared poorly and that they would benefit financially from higher visibility.

In a statement accompanying the bill, Walgren noted that while NSF has prospered after setbacks in the early days of the Reagan Administration, "unfortunately, one scientific discipline—the study of social and behavioral sciences—has been conspicuously immune from this upswing in federal support. In current dollars," Walgren continued, "the behavioral and social sciences have only recently caught up to their 1980s level. In constant dollars, NSF support for the social sciences has fallen nearly 38 percent in the past decade—a period in which the total NSF research budget grew by 27 percent."

The issue of a Directorate for the social and behavioral

sciences is under study by an NSF task force scheduled to issue an interim report January 31 and a final report in April. Meanwhile, a coalition organized by the American Psychological Society—the academic research breakaway from the clinically oriented American Psychological Association—is developing a research agenda for the NSF role in the social and behavioral sciences.

It's an old story in science politics that a discipline needs a place to fly its own flag in Washington, as evidenced by the endless scheming to create new institutes at the National Institutes of Health. The record shows that success pays off, with the greater visibility leading to bigger budgets, which is what the process is aimed at. That's what happened under the old rules of budget making. Whether they prevail in the Gramm-Rudman era is another matter.

Job Changes & Appointments

Ruth L. Kirschstein has been appointed acting Director of the newly established Office of Research on Women's Health within the Office of the Director of NIH, a post she will hold while continuing as Director of the National Institute of General Medical Sciences. The women's office was created following recent Congressional criticism of sparse female participation in NIH clinical studies. It comes into being just a step ahead of legislation mandating its creation.

Nicholas Wade has been appointed Science and Health Editor of the *New York Times*, succeeding **Philip M. Boffey**, who has been appointed Deputy Editorial Page Editor. Wade has been an editorial writer at the *Times* since 1982, specializing in scientific and technological topics. He and Boffey are alumni of the *Science* news staff, and Wade formerly was with *Nature*.

Bassam Z. Shakhshiri, former head of Science and Engineering Education at NSF, has returned to the University of Wisconsin, Madison, where he is a Professor of Chemistry. Shakhshiri, who presided over the renaissance of education at NSF, was fired from that post in May in one of the last personnel moves of departing Director Erich Bloch (SGR June 15).

Named by the President for appointment to the National Science Board, the 24-member policymaking body of the National Science Foundation: **Phillip A. Griffiths**, Duke University Provost and Professor of Mathematics, to succeed **Annelise Anderson**; also, **Jaime Oaxaca**, Vice Chairman, Coronado Communications, Los Angeles, to succeed **Rita R. Colwell**. The appointments, for six-year terms, are subject to Senate confirmation. One vacancy remains from the eight appointments that expired last May.

Rodney Nichols, Executive Vice President of Rockefeller University and a frequent participant in science-policy affairs in Washington, has taken an appointment as Scholar in Residence at the Carnegie Corporation.

Shift Urged in NIH Priorities

A gradual reallocation of NIH extramural resources toward training and facilities is recommended in a forthcoming report, *Funding Health Sciences Research: A Strategy to Restore Balance*, produced by a high-ranking committee convened by the Institute of Medicine. The Committee, chaired by Floyd E. Bloom, Chairman of Neuropharmacology, Research Institute of Scripps Clinic, doesn't call for abrupt changes, but stresses that, over the long run, the "most critical and longest term investment in the research system is the development of career scientists." The report will be available in November from the National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800-624-6242; in Washington, DC: 334-3313.

More In Print: Fuel Alternatives, Drug Treatment, Etc.

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Replacing Gasoline: Alternative Fuels for Light-Duty Vehicles (GPO Stock No. 052-003-01206-5; 136 pp., \$7), a generally cautious and skeptical view of the leading potential alternatives for presentday gasoline: methanol, ethanol, natural gas, electric, hydrogen, and reformulated gasoline. (Not included was fuel derived from coal.) Each comes with high hopes and favorable notices, OTA says, but the economic and environmental realities are poorly understood while the accompanying assumptions about technology, capital costs, etc. are questionable. OTA states that "Changing these assumptions to still-plausible values will change the cost and benefit results, sometimes drastically." The report concludes, however, that the risks of oil dependency justify efforts to develop alternatives.

The Effectiveness of Drug Abuse Treatment: Implications for Controlling AIDS/HIV Infection (GPO Stock No. 052-003-01210-3; 152 pp., \$7.50), endorses methadone maintenance as a means of reducing intravenous opiate consumption, a major source of HIV transmission. OTA notes long waiting lists for methadone treatment.

The report was requested by Rep. Ted Weiss (D-NY), a leading proponent of federal AIDS research and treatment programs.

Order OTA publications from: USGPO, Superintendent of Documents, Washington, DC 20402-9325; tel. 202/783-3238. (Add 25 percent for international orders.)

Inventory and Analysis of Federal Population Research: Fiscal Year 1988 (212 pp.) and **Inventory and Analysis of Private Agency Population Research: Fiscal Years 1986 & 1987** (164 pp.; both available without charge), state data, but the latest available, from the NIH National Institute of Child Health and Human Development (NICHD), project-by-project compilations of publicly and privately supported "population research," plus data on disciplines supported and spending trends. Federal support in 1988 totaled \$232 million, including \$134 million for research on reproductive processes, \$30 million for contraceptive development, and \$5 million for contraceptive evaluation. Private funding for population research totaled \$30 million in 1987, with most of it coming from major foundations—Ford (\$3.1 million), Hewlett (\$6.2 million), A.W. Mellon (\$6.5 million), the Population Council (\$8.1 million), and Rockefeller Foundation (\$6.2). The reports are prepared by NICHD for the federal Interagency Committee on Population Research.

Order from: National Institute of Child Health and Human Development, Child Health Information, Building 31, Room 2A-32, 9000 Rockville Pike, Bethesda, Md., 20892; tel. 301/496-5133.

Carbon Charges as a Response to Global Warming: the Effects of Taxing Fossil Fuels (69 pp., no charge), by the

Congressional Budget Office (CBO), based on economic modeling of the effects of taxation on fossil-fuel consumption, CBO concludes that so-called carbon charges would be effective for reducing carbon-dioxide emissions, but that "rapid imposition" of charges could cost an annual 1-2 percent loss of gross national product during the first decade. The report adds that "the costs of reducing the consumption of fossil fuels suggest that there may be merit in looking into other ways of dealing with global warming."

Order from: Congressional Budget Office, Publications, 2d and D Sts. SW, Washington, DC 20515; tel. 202/226-2809.

Review of the Department of Energy's Inertial Confinement Fusion (ICF) Program: Final Report (45 pp., no charge), by a committee convened by the National Academy of Sciences, under a Congressional mandate to examine the ICF program, the other route to the prolonged fantasy of limitless fusion power. The committee, chaired by Steven E. Koonin of Caltech, concludes that "after 27 years and \$2.5 B, there is a reasonable chance for laboratory ignition and gain with the next major ICF facility, given favorable results from a few well-defined experiments."

It is now realistic to begin planning an ignition demonstration, the Committee stated, but it added that "a final commitment to construction will require several more years of experimental and design work." A demonstration could be achieved "by the end of the decade," even in the currently tight budget situation, the Committee said. The report noted that "because the most immediate ICF applications are those related to defense, we recommend that DOE continue to recognize ICF as primarily a defense, rather than an energy program."

Order from: Naval Studies Board, National Academy of Sciences, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-3523.

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In Print: Global Technology, Recruitment, Lab Space

The publications listed are obtainable as indicated—not from SGR.

National Interests in an Age of Global Technology, from the National Academy of Engineering (NAE), says protectionist tactics are futile against the rapid international diffusion of technology, capital, and management. The path to riches for the US, it says, is to be so attractive and intellectually potent that talent, inventiveness, and productivity will inevitably thrive here. Among the recommended steps is "a stronger public role in support of generic technologies"—a position on which the Bush Administration has lately been yielding a bit from its originally negative stance. The report was produced by a panel of industrial engineers and executives chaired by Thomas H. Lee, Professor Emeritus of Electrical Engineering, MIT. A pre-publication version of the report was released to the press last month. Copies for general distribution will be available in November, according to the NAE.

Also from the Academy complex: **Recruitment, Retention, and Utilization of Federal Scientists and Engineers** (179 pp., \$15), an amorphous heap of data and miscellaneous assertions concerning the 200,000 scientists and engineers employed by the federal government, produced by a committee of the National Academy of Sciences under contract to the Carnegie Commission on Science, Technology, and Government. The Carnegie Commission, an assemblage of science-policy veterans and busybodies, posed questions on the hiring, use, and quality of this sector of the federal workforce. The NAS committee notes in its reply that "this report does not give precise responses but, rather, sheds light on the confusion associated with many of those questions." Further compounding the confusion is a post-publication press release from the Academy stating that the Academy Committee "did not endorse or propose the adoption of any of the mechanisms to enhance recruitment or retention detailed" in the report. Chairing the study was Alan K. Campbell, head of the Civil Service Commission in the Carter Administration. Still to come from the Academy are studies on federal science and engineering career personnel and high-level political appointees.

Order Academy publications from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800-624-6242; in Washington, DC: 334-3313.

Scientific and Engineering Research Facilities at Universities and Colleges: 1990 (NSF 90-318; 134 pp., no charge), third in a biennial NSF series derived from surveys mandated by Congress, which has been pushing for over a decade for resumption of federal funds for campus lab construction. The report states that academic institutions have increased construction spending for lab facilities from \$2 billion in 1986-87 to \$2.5 billion in 1988-89. But the figures for deferred construction rose even higher, from \$5.8

billion to \$8 billion, according to the respondents (whose reckonings on their neglected desires are open to skepticism). NSF says several institutions blamed disappointments in fund raising for a "substantial amount of eleventh-hour downscaling or abandonment" of planned construction. At public universities, state and local agencies provided half the building money, while private institutions relied heavily on donations. Debt and institutional funds were other major sources; federal agencies provided very little. Seventy percent of academic R&D space is located in 100 universities. The report covers lab space by discipline and current and planned expenditures, but does not link the numbers to specific institutions.

Order from: National Science Foundation, Division of Science Resources Studies, 1800 G St. NW, Washington, DC 20550; tel. 202/634-4634.

From the Congressional Office of Technology Assessment (OTA): **Unconventional Cancer Treatments** (GPO Stock No. 052-003-01207-3; 312 pp., \$14; also available: a 32-page summary, GPO Stock No. 052-003-01208-1, \$1.75), report on perhaps the thorniest topic ever placed on the OTA agenda—unorthodoxy in cancer therapy, denounced by mainstream medicine as murderous quackery and larceny but tempting to what OTA refers to as a "visible minority" of patients. The OTA report, requested by Rep. John Dingell (D-Mich.), notes that patients are drawn to unconventional treatments because of the failings and severity of conventional treatments. Are any of the treatments effective? OTA ducks that one, instead noting that "No doubt this report will be used selectively by individuals wishing to portray various points of view, in support of or in opposition to particular treatments. The reason this is possible is that, almost uniformly, the treatments have not been evaluated using methods appropriate for actually determining whether they are effective. Regrettably, there is no guidance for new patients wanting to know whether these treatments are likely to help them." Among the options suggested: Require the National Cancer Institute to collect data on unconventional treatments and provide funds for evaluating treatments. The report was prepared under a therapeutically eclectic advisory panel chaired by Rosemary Stevens, of the University of Pennsylvania.

Health Care in Rural America (GPO Stock No. 052-003-01205-7; 529 pp., \$22), in which OTA has nearly nothing favorable to report about health services for the rural population, which, while dwindling, still numbers about 57 million. Among the problems cited: lack of health insurance and accessible services and rising insolvency among rural hospitals. Options listed by OTA include financial inducements for physicians and other health personnel to serve rural areas and an expansion of research on rural health needs and innovative means of delivery.

(Continued on Page 7)

